

# Effect of Continuous Epidural Anaesthesia in Painless Delivery

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## Yun *et al.*: Continuous epidural anaesthesia and painless delivery

To investigate the significance of applying continuous epidural anaesthesia in painless delivery anaesthesia, 125 cases of full-term delivery parturients who were admitted to the hospital's Obstetrics Department between November 2015 and June 2016 were selected and randomly grouped. Sixty four cases who opted for continuous epidural anaesthesia during delivery were divided into Group I, 61 cases not opted for analgesia were divided into Group II and results of delivery and the delivery course were compared between the two groups. There were 3 caesarean deliveries (4.69 %) of 64 cases in Group I, 18 (29.51 %) of 61 cases in Group II ( $p < 0.05$ ) and the first and second stages of labor in Group I were shorter than those in Group II ( $p < 0.05$ ). The technique of continuous epidural anaesthesia in parturient delivery is helpful to improve the quality of anaesthesia and shorten the delivery course, which shall be prioritized.

**Key words:** Epidural anaesthesia, painless delivery, obstetrics

The painless delivery program is one of the most critical technical methods of parturient delivery. The continuous epidural anaesthesia technique can not only improve the parturient pain index, but also shorten the stages of labor, reduce pain and consequently, its application safety can be ensured<sup>[1-5]</sup>. To investigate the practice of this anaesthetic technique in the hospital's Obstetrics Department, 125 cases of full-term delivery parturients who were admitted to the hospital's Obstetrics Department between November 2016 and June 2019 were selected for study, with the aim of improving the outcome of delivery and shortening the delivery course. This study was conducted on 125 cases of full-term delivery parturients who were admitted to the hospital's Obstetrics Department between November 2016 and June 2019 were selected and randomly grouped. Inclusion criteria were, rimigravida women, singleton pregnancies, term pregnancy of 37-42 w, no medical diseases and, cervical dilation of 3-4 cm (beginning of the active labor phase). Women with complicated pregnancies such as preeclampsia, fetal malformation, gestational diabetes mellitus, and placenta previa, chronic illnesses such as hypertension and diabetes mellitus and multiple pregnancies were excluded from the study. Sixty four cases were included in group I, which are of 23-35 y old with mean age of  $28.8 \pm 1.93$  y. All were in the gestational period of 39-42 w with an average of  $40.6 \pm 0.21$  w. Sixty one cases were

included in group II of the age range 22-37 y with a mean age of  $29.1 \pm 1.88$  y. These patients were in gestational week 40-42 w with an average of  $41.1 \pm 0.16$  w. There were no complications during the gestation period in these two groups and their clinical information was comparable. The technique of continuous epidural anaesthesia was applied in 64 patients in Group I during delivery, The opening degree of the uterine orifice was observed and once the opening range was between 2-3 cm, the L3-4 gap was located to insert the needle. The puncture condition of the body was judged and the epidural catheterization device was slowly inserted to a depth of about 3 cm and 3.0 ml of a mixture of fentanyl+ropivacaine was injected at a uniform rate when the body is in the intermittent stage of uterine contraction. After about half an hour, if necessary to add 6 ml if appropriate upon evaluating the condition of the parturient and continue to administrate the medicine, at an interval of about half an hour, and each time the dosage is maintained at 6 ml depending on the level of parturient's analgesia. If the parturient still feels the pain, the dosage shall be increased appropriately. During the second stage of delivery, it is necessary to stop the administration of anesthesia and to conduct dynamic monitoring of maternal health and neonatal status. On the other hand the 61 cases in Group II were subjected to natural delivery technique and no analgesic regimen was employed. SPSS 20.0 software

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was used to tabulate, code and analyse data. Numerical data were presented as mean±SD and categorical data were presented as number of cases. Unpaired Student t-test was used to compare the numerical difference between groups, and  $\chi^2$ -Test or Fisher's exact test was used to compare difference of categorical data between groups. The 125 parturients' delivery technique and delivery course were studied with mean±SD and n/%, respectively. After the data analysis, the two groups data were compared at a level of significance of  $p < 0.05$ . There were 3 caesarean deliveries (4.69 %) of 64 cases in group I, 18 (29.51 %) of 61 cases in group II ( $p < 0.05$ ) and in the meantime, the first and second stages of labor in Group I were shorter than those in Group II ( $p < 0.05$ ), as shown in Table 1. Comparison of total delivery time, postpartum blood loss and delivery mode of parturients and neonatal asphyxia between the 2 groups showed that the total delivery time and caesarean delivery rate of the parturients in the group I were significantly lower than that in the control group, while the vaginal delivery rate was significantly higher than that in the control group and in addition, there was no significant difference in the postpartum blood loss and neonatal asphyxia, as shown in Table 2. Regarding postoperative complications, no difference in each parameter was found between the 2 groups. As shown in Table 3, there were 3 patients in group I and 2 patients in group II with nausea and vomiting who were treated with metoclopramide 10mg; 2 patients in group I and 1 patient in group II experienced pruritus, without the need for treatment; 2 patients in group I and 1 patient in group II developed hypotension, and were treated with 250 mg ringer acetate and only the patient in Group II needed ephedrine sulfate 5-10mg; 1 patient from each group developed bradycardia, who were then

administered with atropine (0.01 mg/kg). All of these complications were with no significant difference (Table 3). Juan *et al.* reported that at the time of delivery, the uterus of a parturient would contract sharply so as to have severe pain<sup>[1]</sup>. In addition to making the body tense, a large amount of catecholamines might be released, which can inhibit adequate contraction of uterus so as to prolong the delivery course or even increase the risk of fetal distress. Therefore, attention should be paid to the optimization of delivery technique and the continuous epidural anaesthesia techniques shall be employed to ensure painless delivery. Continuous epidural anaesthesia technique emphasizes full use of epidural catheter equipment to allow anesthetics to enter the body smoothly. By blocking the pain and nervous system, the muscle group at the pelvic floor is always relaxed. In addition to accelerating the opening speed of the uterine orifice, it can also ensure the smooth reduction of fetal head and avoid the development of caesarean delivery<sup>[6-10]</sup>. In addition, through the rational application of fentanyl and ropivacaine, this anaesthesia could avoid adverse symptoms while achieving analgesic efficacy without adversely affecting the uterine contractions, so as to keep parturients in a safe awakened state during the delivery to further reduce the parturient's physical exhaustion and ensure shorter delivery course<sup>[11,12]</sup>. Of the 125 parturients included in this study, there were 3 cases (4.69 %) of caesarean delivery out of the 64 cases in group I after applying continuous epidural anaesthesia, which was significantly lower than the 18 cases (29.51 %) of caesarean delivery out of 61 cases in group II who had natural delivery technique ( $p < 0.05$ ). In addition, the first/second stages of delivery in group I was significantly shorter than that in group II ( $p < 0.05$ ), which indicated that the continuous epidural anaesthesia had advantages in both shortening delivery course and reducing caesarean delivery rate. To sum up, in painless delivery anaesthesia, the continuous epidural anaesthesia technique could help to shorten the first and second stages of delivery while promoting vaginal delivery and enhancing the body's analgesic quality, which shall be prioritized. Delivery is a natural process

**TABLE 1: DELIVERY COURSE OF PARTURIENTS IN TWO GROUPS**

Group	Stage of labor	
	First stage of labor (min)	Second stage of labor (min)
Group I (n = 64 cases)	114.63±70.00	45.16±20.07
Group II (n = 61 cases)	230.16±95.71	60.10±20.13

**TABLE 2: COMPARISON OF GROUPS I AND II**

Group	Total duration of delivery (h)	Vaginal delivery	Caesarean delivery	Postpartum blood loss (ml)	Neonatal asphyxia
Group I	6.24±1.21	54 (90.0)	6 (10.0)	184.65±6.43	1 (1.67)
Group II	9.86±1.65	42 (70.0)	18 (30.0)	182.45±5.98	1 (1.67)
p	<0.05	<0.05	<0.05	>0.05	>0.05

Comparison of total delivery time, postpartum blood loss and delivery mode of parturients, neonatal asphyxia between the two groups, n (%)

**TABLE 3: COMPARISON OF POSTOPERATIVE COMPLICATION BETWEEN GROUPS I AND II**

Parameters	Group I (n=64)	Group II (n=61)	p-value
Nausea and vomiting	3	2	>0.05
Pruritus	2	1	>0.05
Hypotension (requiring ephedrine)	2	1	>0.05
Bradycardia (requiring atropine)	1	1	>0.05
Respiratory depression	0	0	>0.05
Dizziness	0	0	>0.05

while delivery pain is usually due to the compression of the cervix in the process of uterine contractions and when uterine dilation occurs in the lower abdomen shoulder, it will also lead to pain on inner sides of two thighs and on spine, similar to most women's menstrual cramps and uterine contractions, but the pain is more intense<sup>[13,14]</sup>. The painless delivery technique has become a common way to relieve the pain of delivery in clinic. It can make the parturients finish the delivery of the foetus under the condition of complete sobriety, which effectively improves the parturients fear and lowers caesarean delivery rate. However, those who have vaginal birth contraindication and thrust anaesthesia contraindication are prohibited from employing this method<sup>[15-17]</sup>. In conclusion, the painless delivery technique can effectively reduce the pain of parturients delivery, reduce the rate of caesarean delivery, shorten the course of delivery, and ensure the safety of the mother and the infant.

### Conflict of interest:

All authors report no conflicts of interest in this work.

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